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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/620,860
	Filing Date	July 15, 2003
	First Named Inventor	Antonio S. Cruz-Uribe
	Art Unit	1732
	Examiner Name	TENTONI, Leo B.
Total Number of Pages in This Submission: 27	Attorney Docket Number	200309104-1

ENCLOSURES (Check all that apply)

- [ ] Fee Transmittal Form
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Application No.: 10/620,860 Attorney Docket No.: 200309104-1

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HEWLETT-PACKARD COMPANY
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PATENT APPLICATION

ATTORNEY DOCKET NO. 200309104-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Antonio S. Cruz-Uribe et al. **Confirmation No.:** 9136

Application No.: 10/620,860 **Examiner:** TENTONI, Leo B.

Filing Date: July 15, 2003 **Group Art Unit:** 1732

Title: A Method and a System for Producing an Object Using Solid Freeform Fabrication

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on March 17, 2006.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120 ☐ 2nd Month $450 ☐ 3rd Month $1020 ☐ 4th Month $1590

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 500. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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Typed Name: Rebecca R. Schow

Signature:

Respectfully submitted,

Antonio S. Cruz-Uribe et al.

By Steven L. Nichols

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Patent Application of	Group Art Unit: 1732
Antonio S. Cruz-Uribe et al.	
Application No. 10/620,860	Examiner: TENTONI, Leo B.
Filed: July 15, 2003	
For: A Method and a System for Producing an Object Using Solid Freeform Fabrication	

APPEAL BRIEF

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Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief under Rule 41.37 appealing the final decision of the Primary Examiner dated December 20, 2005. Each of the topics required by Rule 41.37 is presented herewith and is labeled appropriately.

I. Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. Related Appeals and Interferences

There are no appeals or interferences related to the present application of which the Appellants are aware.

III. Status of Claims

Claims 1-42 are currently pending in the application and all stand finally rejected. Claims 43-56 have been withdrawn from consideration. Appellant appeals from the final rejection of claims 1-42, which claims are presented in the Appendix.

IV. Status of Amendments

Following the final Office Action of December 20, 2005, Appellant filed one after-final response on February 9, 2006. However, this response did not propose any amendments to the application. Consequently, its entry into the record has no effect on the claims presented in the Appendix.

V. Summary of Claimed Subject Matter

Solid freeform fabrication is a process for manufacturing three-dimensional objects. Typical objects that may be manufactured using solid free form fabrication include, for example, prototype parts, production parts, models, and working tools. Solid freeform fabrication is an additive process in which a desired object is described by electronic data and automatically built from base materials. Selective deposition is one common method of solid freeform fabrication. (Appellant's specification, paragraph 0001). Typical selective deposition methods include using a dispensing mechanism to deposit, at particular locations, individual drops of material known as voxels. (Appellant's specification, paragraph 0002).

Depositing voxels of material with high precision is relatively time consuming, but produces an object that more accurately conforms to the intended design. In order to speed up the fabrication process without sacrificing accuracy, Appellant has disclosed and claimed the idea of using high-precision selective deposition techniques and/or apparatus to build a containment structure defining the boundaries of at least a portion of the object being fabricated. Lower-precision selective deposition techniques and/or apparatus can then be used to more rapidly form the desired object within the containment structure.

As shown in Figure 4, an exemplary method begins by depositing and solidifying a containment structure (step 400). The containment structure (113; Fig. 2) may be formed out of a material deposited by a material dispenser including, but in no way limited to, melted wax, a polymer, or any other compound that is readily jetted to defined locations. Once the containment structure material is deposited in a designated location, the containment material may solidify through cooling or a rapid chemical curing process activated by chemical agents present in the containment material. (Appellant's specification, paragraph 0036).

The object forming boundary (109; Fig. 2) of the containment structure (113; Fig. 2) forms the surface that defines the walls, the base, and/or the top (if vertical nesting is required) of the desired three-dimensional object. The containment material may be linearly placed or deposited as a number of voxels vertically stacked on one another forming a number of perimeter structures that may be connected to define the outer surface of a segment of the desired three-dimensional object. Additionally, the containment structure may be one or multiple segments thick. Since the object forming boundary (109; Fig. 2) of the containment structure (113; Fig. 2) is the only portion of the containment structure that affects the surface of the desired three-dimensional object, it is the only portion of the containment structure that needs to be formed through selective boundary deposition using a material dispenser operating as a high precision dispenser. Once the object forming boundary (109; Fig. 2) has been formed, the remainder of the containment structure (113; Fig. 2) may be formed by one of the material dispensers (105) operating as a low precision dispenser. (Appellant's specification, paragraph 0037).

In some cases, the object forming boundary (109) of the containment structure is formed so thin that it may lack structural strength. In order to add structural strength to the continuous object forming boundary (109) while reducing material use, a sparse array structure may be deposited. As shown in Figure 5B, the sparse array structure beyond the continuous object forming boundary (109) may include a number of voids (520) defined by sparsely located areas of structural material (510). This sparse array structure not only reduces the amount and cost of structural material needed to form a structurally viable containment structure (113), the reduction in structural material also reduces the processing time required to remove the structural material from the desired three-dimensional object after fabrication. Moreover, the sparsely located areas of material may be deposited using a

material dispenser operating as a low precision dispenser since voxel placement is not as important outside of the continuous object forming boundary (109). (Appellant's specification, paragraph 0039).

VI. Grounds of Rejection to be Reviewed on Appeal

The final Office Action of December 20, 2005 made the following rejections for which review is sought by this appeal.

Claims 1-26, 37 and 39-42 were rejected as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,346,986 to Kieronski ("Kieronski").

Claims 1-42 were also rejected as being unpatentable under 35 U.S.C. § 103(a) over the teachings of Kieronski taken alone.

Claims 1-26 and 39-42 were rejected as anticipated under 35 U.S.C. § 102(b) by DE 19537264 to Greul et al. ("Greul").

Claims 27-38 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the teachings of Greul taken alone

VII. Argument

Claims 7 and 27:

Claim 7 recites:

> A method for producing an object through solid freeform fabrication comprising:
> selectively depositing containment material to form a boundary structure *with a high precision dispenser*; and
> depositing a flowable object build material into said boundary structure with a low precision dispenser.

(emphasis added).

Independent claim 27 similarly recites:

> A method of producing an object through solid freeform fabrication comprising:
> selectively depositing containment material to form a plurality of perimeter structures defining an outer surface of said object *with a high precision dispenser*: and
> dispensing a volume of fluid build material interior to said perimeter structures.

(emphasis added).

In contrast, Kieronski and Greul both fail to teach or suggest selectively depositing containment material to form a boundary or perimeter structure *with a high precision dispenser* as claimed. According to Appellant's specification, "selective deposition methods include using a dispensing mechanism to deposit, at particular locations, individual drops of material known as voxels." (Appellant's specification, paragraph 0002). "The term selective deposition is meant to be understood both here and in the appended claims as a method whereby the material dispensers (105) selectively deposit structural material that makes up the object forming boundary (109)." (Appellant's specification, paragraph 0028). Accordingly, claims 7 and 27 recite selectively depositing containment material *with a high precision dispenser*.

The system taught by Kieronksi does not include selectively depositing containment material with a high precision dispenser as claimed. Rather, Kieronski teaches using stereolithography to form a "part" that is essentially a mold, the mold "having opposing interior surfaces. An uncured strength material is [then] interposed between the opposing interior surfaces.... The strength material is chosen to bond to the opposing interior surfaces during the heating step." (Kieronski, abstract). Thus, the mold of Kieronski is formed using stereolithography.

As is well known to those of skill in the art, stereolithography does not involve "selectively depositing" material with a "dispenser" as claimed. Rather, in stereolithography, a moveable platform is placed in a bath of liquid plastic. A laser is used to selectively

solidify a portion of the surface of the liquid plastic on the platform.[1] The platform is then lowered further into the bath so that the solidified portion is submerged just below the surface of the liquid. The laser then again solidifies a portion of the surface of the liquid plastic. This process repeats until a desired object is formed on the platform.[2] The process *does not* include the selective *deposition* of material using "a high precision dispenser" as does Appellant's claimed method.

The final Office Action argues that "stereolithography ... is deemed to meet the recitation of 'selectively depositing.'" (Action of 12/20/05, p. 4). It is unclear, however, how this unsupported conclusion was reached and how it can possibly be correct. Rather, this is an unreasonable construction of the terms "selectively depositing" and "dispenser." A stereolithography laser is obviously not a "dispenser" of material as claimed. The stereolithography taught by Kieronski simply does not include "selectively depositing containment material to form a boundary structure *with a high precision dispenser*," as recited in claims 7 and 27.

"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least this reason, the rejection of claims 1, 7 and 39 and their respective dependent claims under § 102 based on Kieronski should not be sustained.

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[1] Stereolithography is a "three-dimensional printing process that makes a solid object from a computer image by using a computer-controlled laser to draw the shape of the object onto the surface of liquid plastic." (http://dictionary.reference.com).

[2] *See*, http://computer.howstuffworks.com/stereolith.htm

With regard to the § 103 rejection based on Kieronski, as demonstrated above, Kieronski fails to teach or suggest the claimed methods that includes "selectively depositing containment material" "*with a high precision dispenser.*" In fact, Kieronski teaches away from selectively depositing containment material by teaching an entirely different process, i.e., stereolithography, for the formation of a mold.[3]

Moreover, there is no motivation in the prior art to modify Kieronski so as to include the claimed method step of selectively depositing containment material. Any such modification would be an outright change in the operating principles taught by Kieronski. "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." M.P.E.P. § 2143.01.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Consequently, the rejection under § 103(a) based on Kieronski should also be reconsidered and withdrawn.

As noted above, claims 1-26 and 39-42 were also rejected as anticipated under 35 U.S.C. § 102(b) Greul. Claims 27-38 were rejected as being unpatentable under 35 U.S.C. §

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[3] A reference must be considered for all it teaches, including disclosures that teach away from the invention as well as disclosures that point toward the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.* 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985).
A reference must be considered for all it teaches, including disclosures that teach away from the invention as well as disclosures that point toward the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.* 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985).

103(a) over the teachings of Greul taken alone. For at least the following reasons, these rejections are respectfully traversed.

Like Kieronski, Greul does not teach or suggest "selectively depositing containment material to form a boundary structure, wherein said boundary structure defines a surface of said object." As shown in Figs. 2-3, Greul teaches using a form to build two halves of a mold. There is no "selective deposition" of material to form the mold. Then, as shown in Fig. 4, the mold is assembled and, in Figs. 5-7, the mold is filled to produce the desired object.

Nowhere does Greul teach or suggest "selectively depositing containment material to form a boundary structure, wherein said boundary structure defines a surface of said object." Reference should be had to the definition of "selectively depositing" from Appellant's specification which was noted above.

Again, "[a] claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. And, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). For at least these reasons, the rejections based on Greul should not be sustained.

Claims 1 and 39:

Claim 1 recites:

> A method for producing a three-dimensional object through solid freeform fabrication comprising:
> *selectively depositing* containment material to form a boundary structure, wherein said boundary structure defines a surface of said object; and
> depositing a flowable build material within said boundary structure, wherein said flowable build material forms a portion of said object by flowing to said boundary structure.

(emphasis added).

Independent claim 39 similarly recites:

> A method of creating a three-dimensional object with a liquid build material comprising:
> *selectively depositing containment material to form a structural boundary*, wherein said structural boundary defines a surface of said three-dimensional object;
> dispensing a liquid build material into said structural boundary; and
> solidifying said liquid build material.

(emphasis added).

As demonstrated above, no prior art has been cited that teaches or suggests the selective deposition of containment material to form a boundary structure as claimed. The conclusions reached in the final Office Action can only be reached if one ignores the definition of "selectively depositing" which is both given in Appellant's specification and is clear in the art. If the proper definition of "selectively depositing containment material" is respected, it becomes clear that the prior art cited fails to teach or suggest Appellant's claimed subject mater. For at least these reasons, the rejection of claims 1 and 39 and their dependent claims should not be sustained.

Claim 37:

Independent claim 37 recites:

> A method of producing a porous object though solid freeform fabrication, said method comprising:

selectively depositing a first material with a high precision dispenser to form an outer boundary structure;

selectively depositing a smaller, internal boundary structure with said high precision dispenser; and

filling said outer boundary structure with a solidifiable build material, wherein said filling is performed by a low precision dispenser.

As demonstrated above, Kieronski fails to teach or suggest selectively depositing a first material to form an outer boundary structure. Kieornski further fails to teach or suggest selectively depositing a smaller, internal boundary structure with the same dispenser. For at least these reasons, the rejection of claim 37 and its dependent claims based on Kieornski should not be sustained.

Claim 8:

Claim 8 recites "depositing a sparse array support structure to support said boundary structure." None of the cited prior art references teach or suggest depositing a sparse array support structure to support a deposited boundary structure. The final Office Action fails to indicate how or where the prior art teaches this subject matter and thus fails to make out a *prima facie* case of unpatentablity.

Claim 18:

Claim 18 recites "wherein said removing said boundary structure comprises melting said boundary structure." None of the cited prior art references teach or suggest melting a boundary structure. The final Office Action fails to indicate how or where the prior art teaches this subject matter and thus fails to make out a *prima facie* case of unpatentablity.

Claim 29:

Claim 29 recites "dispensing a volume of fluid build material comprises adjusting said volume with a feedback control device." None of the cited prior art references teach or suggest a feedback control device as claimed. The final Office Action fails to indicate how or where the prior art teaches this subject matter and thus fails to make out a *prima facie* case of unpatentablity.

In view of the foregoing, it is submitted that the final rejection of the pending claims is improper and should not be sustained. Therefore, a reversal of the Final Rejection of December 20, 2005 is respectfully requested.

Respectfully submitted,

DATE: May 12, 2006

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Rebecca R. Schow

VIII. CLAIMS APPENDIX

1. (previously presented) A method for producing a three-dimensional object through solid freeform fabrication comprising:

selectively depositing containment material to form a boundary structure, wherein said boundary structure defines a surface of said object; and

depositing a flowable build material within said boundary structure, wherein said flowable build material forms a portion of said object by flowing to said boundary structure.

2. (original) The method of claim 1, further comprising planarizing said flowable build material.

3. (original) The method of claim 1, further comprising solidifying said flowable build material.

4. (original) The method of claim 3, wherein said solidifying comprises curing said flowable build material.

5. (original) The method of claim 3, wherein said solidifying comprises chemically curing said flowable build material, said chemical curing resulting from the activation of chemical agents within said flowable build material.

6. (original) The method of claim 3, wherein said solidifying said flowable build material occurs after said flowable build material has flowed to said boundary structure

7. (previously presented) A method for producing an object through solid freeform fabrication comprising:

selectively depositing containment material to form a boundary structure with a high precision dispenser; and

depositing a flowable object build material into said boundary structure with a low precision dispenser.

8. (previously presented) The method of claim 7, further comprising depositing a sparse array support structure to support said boundary structure.

9. (original) The method of claim 8, wherein said sparse array support structure comprises build material.

10. (original) The method of claim 8, wherein said sparse array support structure is deposited with a low precision dispenser.

11. (original) The method of claim 7, wherein said low precision dispenser and said high precision dispenser comprise a single print head.

12. (original) The method of claim 7, wherein said depositing a flowable object build material further comprises depositing said flowable object build material in a single location within said boundary structure.

13. (original) The method of claim 7, further comprising solidifying said flowable object build material.

14. (original) The method of claim 13, wherein said solidifying comprises curing said object build material.

15. (original) The method of claim 14, wherein said curing comprises exposing said object build material to ultraviolet radiation.

16. (original) The method of claim 14, wherein said curing comprises chemically curing said object build material.

17. (original) The method of claim 13, further comprising removing said boundary structure from said object build material after said solidification of said object build material.

18. (original) The method of claim 17, wherein said removing said boundary structure comprises melting said boundary structure.

19. (original) The method of claim 7, further comprising planarizing said object build material.

20. (original) The method of claim 7, wherein said boundary structure comprises a jetted polymer.

21. (original) The method of claim 20, wherein said jetted polymer comprises a wax.

22. (original) The method of claim 7, wherein said flowable object build material comprises a polymer curable by ultraviolet (UV) radiation.

23. (original) The method of claim 7, wherein said object build material comprises a wax.

24. (original) The method of claim 7, wherein said depositing a flowable object build material comprises depositing a continuous stream of said build material.

25. (original) The method of claim 7, wherein said depositing a flowable object build material comprises depositing discrete drops of said build material.

26. (previously presented) The method of claim 7, wherein said selectively depositing a boundary structure further comprises selectively forming a cavity within said boundary structure.

27. (previously presented) A method of producing an object through solid freeform fabrication comprising:

selectively depositing containment material to form a plurality of perimeter structures defining an outer surface of said object with a high precision dispenser: and

dispensing a volume of fluid build material interior to said perimeter structures.

28. (original) The method of claim 27, further comprising solidifying said fluid build material.

29. (original) The method of claim 27, wherein said dispensing a volume of fluid build material comprises adjusting said volume with a feedback control device.

30. (original) The method of claim 29, wherein said feedback control device comprises an optical sensor.

31. (original) The method of claim 27, wherein said dispensing a volume of fluid build material comprises ejecting said volume of fluid build material from one of a print head or a syringe.

32. (original) The method of claim 31, wherein said ejecting comprises depositing said fluid build material in a single location within said boundary structure.

33. (original) The method of claim 31, wherein said ejecting comprises dispensing a continuous flow.

34. (original) The method of claim 27, further comprising planarizing said volume of fluid build material.

35. (original) The method of claim 34, wherein said planarizing further comprises displacing a roller across said volume of fluid build material.

36. (original) The method of claim 27, wherein said selectively depositing a plurality of perimeter structures comprises depositing a structural material in a sparse array configuration except at an interface configured to receive said volume of fluid build material.

37. (original) A method of producing a porous object though solid freeform fabrication, said method comprising:

selectively depositing a first material with a high precision dispenser to form an outer boundary structure;

selectively depositing a smaller, internal boundary structure with said high precision dispenser; and

filling said outer boundary structure with a solidifiable build material, wherein said filling is performed by a low precision dispenser.

38. (original) The method of claim 37, wherein said smaller, internal boundary structure is interconnected with a second internal boundary structure.

39. (previously presented) A method of creating a three-dimensional object with a liquid build material comprising:

selectively depositing containment material to form a structural boundary, wherein said structural boundary defines a surface of said three-dimensional object;

dispensing a liquid build material into said structural boundary; and

solidifying said liquid build material.

40. (original) The method of claim 39, wherein said structural boundary is selectively deposited with a high precision material dispenser.

41. (original) The method of claim 39, wherein said liquid build material is dispensed by a low precision material dispenser.

42. (original) The method of claim 39, wherein:

said structural boundary is deposited by a material dispenser operating as a high precision dispenser; and

said liquid build material is dispensed by said material dispenser operating as a low precision dispenser;

wherein said high precision dispenser and said low precision dispenser are a single print head.

43. (withdrawn) An object created by solid freeform fabrication, said object comprising:

a plurality of bound object material including a cured material; and

a plurality of cavities disposed within said object material, said cavities formed within said bound object material by selective deposition.

44. (withdrawn) The object of claim 43, wherein said plurality of cavities are interconnected.

45. (withdrawn) The object of claim 44, wherein said interconnected cavities extend to a surface of said object.

46. (withdrawn) A solid freeform fabrication apparatus comprising:

a fabrication bin;

a movable stage for distributing material in said fabrication bin; and

a material dispenser coupled to said movable stage;

wherein said material dispenser functions as a high resolution dispenser to selectively deposit a boundary structure, and said material dispenser functions as a low resolution dispenser to dispense flowable object build material into said boundary structure.

47. (withdrawn) The apparatus of claim 46, further comprising a roller configured to planarize said material.

48. (withdrawn) The apparatus of claim 46, wherein said material dispenser comprises an inkjet print head.

49. (withdrawn) The apparatus of claim 46, wherein said material dispenser comprises a print head or a syringe.

50. (withdrawn) A solid freeform fabrication apparatus comprising:

a containment means for containing fabrication materials;

a distribution means for distributing said fabrication materials in said containment means;

a high resolution material dispensing means for selectively depositing a boundary structure fabrication material; and

a low resolution material dispensing means for dispensing a flowable build material within said boundary structure fabrication material.

51. (withdrawn) The solid freeform fabrication apparatus of claim 50, further comprising a planarizing means for planarizing said fabrication materials.

52. (withdrawn) The solid freeform fabrication apparatus of claim 50, wherein said high resolution material dispensing means and said low resolution material dispensing means comprise a single material dispenser.

53. (withdrawn) The solid freeform fabrication apparatus of claim 52, wherein said material dispenser comprises an inkjet printhead

54. (withdrawn) A processor readable medium having instructions thereon for:

receiving data corresponding to a solid freeform fabrication object;

controlling a selective dispensing of material to form a boundary structure defining an outer surface of said object, wherein said material is dispensed with a high precision dispenser; and

controlling a dispensing of flowable build material into said boundary structure with a low precision dispenser to form said solid freeform fabrication object.

55. (withdrawn) The processor readable medium of claim 54, wherein said high precision dispenser and said low precision dispenser comprise a single material dispenser.

56. (withdrawn) The processor readable medium of claim 55, wherein said material dispenser comprises an inkjet print head.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None

XI. Certificate of Service

None